

a3 34. An apparatus according to claim 27, wherein the suspending means suspends any relative lateral movement between the cutting edge implement, the film, and the anvil for approximately one second.

35. An apparatus according to claim 27, wherein the insulating insert is made of either mica or ceramic glass.--.

REMARKS

Applicants request favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 1-35 are presented for consideration. Claims 1, 8, 15, 23, and 27 are independent. Claims 27-35 are newly added to recite further patentable features of the present invention.

Applicants' representatives thank Examiners Weeks and Kim for the cordial and productive interview held on June 10, 2002, during which several features of the present invention, particularly those set forth in independent claim 1, 8, 15, and 23 and dependent claims 5 and 6, were discussed.

Claims 1-35 are presented for consideration. Claims 1, 8, 15, 23, and 27 are independent. Claims 27-35 are newly added to recite further patentable features of the present invention.

Applicants have amended the specification and claims 12 and 13 to correct formal, typographical errors. Applicants also are submitting herewith a Request for

Approval of Drawing Changes to attend to the objection to the drawings noted in the Office Action. No new matter has been added by these amendments.

In the Office Action, claims 1-3, 7, 8, 14-17, and 23-25 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,546,732 to Coleman, et al. Claims 4-6, 9-13, 18-22, and 26 were variously rejected under 35 U.S.C. § 103(a) as being unpatentable over the Coleman, et al. patent in view of U.S. Patent No. 5,718,101 to Noel, et al., U.S. Patent No. 6,305,149 to Gorlich, et al., U.S. Patent No. 5,094,657 to Dworak, et al., or U.S. Patent No. 5,689,937 to Gorlich, et al. For reasons discussed at the interview and summarized below, Applicants request reconsideration and withdrawal of these rejections.

I. Background Of The Invention

As discussed at page 2 of the specification, one of the problems in the production of plastic bags using conventional bag-making machines is that a significant amount of smoke is produced as the hot wire burns its way through the film. Some of the smoke condenses on the components of the machine, leaving behind a wax residue which must be cleaned on an almost daily basis. This requires shutting down the machine, thus causing a reduction in productivity.

To address this problem, the present invention utilizes a cutting edge implement that is heated to a temperature sufficient to melt — *but not to burn* — the film, as recited in each of independent claims 1, 8, 15, 23, and newly added claim 27. As noted in the specification at pages 7-8, the effective temperature range of the cutting edge

implement varies depending on the type of film, the thickness of the film, the dwell time during which the cutting edge implement contacts the film, and the pressure exerted on the film by the cutting edge implement. At page 12 of the specification, it is noted that the inventors have found that a cutting edge implement heated to a temperature between about 600° F to about 800° F is sufficient to sever and seal polyethylene film — *but not to burn it* — where the dwell time is approximately one second and the force exerted on the film by the cutting edge implement is about 108 lbf.

The disclosed method of lowering the temperature of the cutting edge implement to alleviate the smoke/residue problem is directly opposite from what U.S. Patent No. 4,913,761 to Russell, et al. teaches. The Russell, et al. patent, a copy of which is enclosed with the accompanying Supplemental Information Disclosure Statement, relates to a method for severing and sealing thermoplastic materials. More specifically, the Russell, et al. patent is directed to solving problems associated with prior art severing and sealing apparatuses, including “[degradation of] polymer, created by the contact of the hot element with the thermoplastic resin, [which] would result in the formation of waxy substances which would build up on the cutting and sealing equipment,” and “[production of] gaseous polymer degradation products during the severing and sealing operation.” (Col. 1, lines 47-57.) To solve these problems — the same problems encountered by Applicants — the Russell, et al. patent teaches “that operation of the element at higher temperatures above about 1300 degrees F., and preferably about 1300 to 1600 degrees F., significantly reduces the evolution of smoke.” (Col. 8, lines 6-9.) Further, “the higher temperatures of operation . . . result[] in significantly greater polymer degradation . . .

resulting in less buildup of waxy solids.” (Col. 8, lines 13-18.) As such, the conventional wisdom at the time of Applicants’ invention, as reflected by the Russell, et al. patent, was to raise the temperature of the cutting edge implement — not to lower the temperature as is done in the present invention. Under controlling Federal Circuit precedent, “proceeding contrary to the accepted wisdom of the prior art . . . is strong evidence of nonobviousness.” W.L. Gore & Assocs. v. Garlock, Inc., 721 F.2d 1540, 1552 (Fed. Cir. 1983).

II. Discussion Of The Rejection Under 35 U.S.C. § 102

The Coleman, et al. patent was cited in the Office Action as anticipating claims 1-3, 7-8, 14-17, and 23-25. Applicants respectfully traverse this rejection.

Each of independent claims 1, 8, 15, and 23 (and also newly added independent claim 27) recites that the cutting edge implement is heated to a temperature sufficient to melt *but not to burn* the thermoplastic material. As discussed at the interview, the Coleman, et al. patent is silent regarding the temperature of the cut-off blade [121], and does not expressly teach or suggest that the blade should be limited to a temperature that will not burn the webs of film [28, 30, 34]. Nor is such teaching inherent from the disclosure of the Coleman, et al. patent. As the Federal Circuit frequently has stated:

Inherency . . . may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. If, however, the disclosure is sufficient to show that the natural result flowing from the operation as taught would result in the performance of the questioned function, it seems to be well settled that the disclosure should be regarded as sufficient.

Finnigan Corp. v. United States Int'l Trade Comm'n, 180 F.3d 1354, 1365 (Fed. Cir. 1999) (quoting Continental Can Co., U.S.A. v. Monsanto Co., 948 F.2d 1264, 1268-69 (Fed. Cir. 1991)).

Thus, although the Coleman, et al. patent leaves open the possibility that the cut-off blade [121] is limited to a temperature that will not burn the film, that mere possibility is not enough to support a rejection under 35 U.S.C. § 102. Accordingly, because the Coleman, et al. patent does not teach or suggest every feature of the claim recitations of independent claims 1, 8, 15, 23, and 27 — either expressly or inherently — Applicants request reconsideration and withdrawal of the rejections of claims 1, 8, 15, and 23 under 35 U.S.C. § 102 and favorable consideration of newly added claim 27. Likewise, as will be discussed further below in connection with the rejections under 35 U.S.C. § 103, each of the other patents noted by the Examiner does not disclose the above-noted feature of the present invention.

Applicants further submit that the § 102 rejection of dependent claims 3, 17, and 24 is misplaced for an additional reason. Claim 3 recites, *inter alia*, a feature of the present invention in which relative motion between a cutting edge implement, a film, and an opposing surface is suspended by synchronously moving the cutting edge implement, the film, and the opposing surface in substantially the same lateral direction. Claim 17 recites, *inter alia*, a feature of the present invention in which a cutting edge implement, a film, and an anvil all synchronously move in substantially the same lateral direction while the film is melted and sealed. Finally, claim 24 recites, *inter alia*, a feature of the present invention in which a plurality of layers of film are fed in a lateral direction,

and a substrate and a cutting edge implement are synchronously moved in the lateral direction during pinching and pressing steps.

The Office Action asserts that the Coleman, et al. patent discloses such features at column 7, lines 18-28. However, this passage from the Coleman, et al. patent merely teaches that “the operation of mechanism [126] and bag conveyor [142] are synchronized with the discharge of bags [12] from the cut-off assembly [120] so that bag conveyor [142] presents a completed bag [12] as a bag receiving surface [146] rotates through the receiving position.” (Col. 7, lines 23-27.) It is Applicants’ understanding that this passage merely talks of synchronizing the removal of a completed bag from a machine with a rotating bag receiving surface, and is silent about synchronizing the movement of e.g., a cutting edge implement, a film, and an opposing surface. To the contrary, the apparatus of the Coleman, et al. patent utilizes an indexing operation, and at each index, “bag section boundaries [94a and 94b] are presented beneath blade [120] which shifts downwardly to pinch the webs against anvil roller [122]. Under the pressure and heat of blade [120], boundary [94a] is both sealed and cut.” (Col. 5, lines 22-26.) Accordingly, in the apparatus of the Coleman, et al. patent, there is no synchronous movement of, e.g., a cutting edge implement, a film, and an opposing surface in substantially the same lateral direction.

III. Discussion Of The Rejections Under 35 U.S.C. § 103

Turning now to the rejections under 35 U.S.C. § 103, Applicants submit that none of the secondary references teaches or discloses, *inter alia*, the step of heating a

cutting edge implement to a temperature sufficient to melt *but not to burn* a thermoplastic material.

The Noel, et al. patent is directed to a method and apparatus for packaging a product in a dual-lid package. More specifically, the Noel, et al. patent discloses a method and apparatus for enclosing a product in a tray [14] by securing a web [24] over the tray [14] and elevating a portion [40] of the web [24]. The elevated portion [40] of the web [24] is then severed by a severing device [46] from the rest of the web [24] to form a lid on the tray. According to Applicant's understanding, the Noel, et al. patent is cited merely for disclosing that the severing device [46] "preferably comprises a heated cutting element such as a heated wire or heated blade." (Col. 6, lines 31-34.) However, the Noel, et al. patent is silent with respect to temperature, and, therefore, does not teach that the temperature used to sever the web [24] is sufficient to melt but not to burn the web [24].

The Gorlich, et al. '149 patent relates to a method of and apparatus for packaging meat. More specifically, the Gorlich, et al. '149 patent discloses a sealer [86] for sealing a film [92] to a tray [55]. The film [92] is then cut by a cutting system [288] that includes a blade [290] having a heater [302] extending along its periphery. (Col. 8, line 35.) "Preferably . . . the heater [is] configured to allow heating of the cutting edge [304] to extremely high temperatures," preferably "to the point where [the film] quickly vaporizes." (Col. 8, lines 56-60.) The Gorlich, et al. '149 patent discloses the following example in which the cutting system [288] is used to sever a film that is a coextrusion of polyethylene and ethylene vinyl acetate:

At approximately 250° F this material softens sufficiently to be sealed to other layers. At about 350° F melting begins. At about 600° F some vaporization occurs, but cutting may not be clean all around. Plastic strings may be created. However, at about 800° F for example, there is effective vaporization of the film. The film may be cut cleanly and reproducibly. The use of force is unnecessary to the cutting and no backing plate is necessary on the side of the film opposite the blade.

(Col. 10, lines 10-20.)

The Office Action cites the Gorlich, et al. '149 patent for its disclosure of a temperature of less than approximately 800° F, as recited in dependent claims 5, 9, and 19 of the subject application, and a temperature range of about 600° F to about 800° F, as recited in dependent claims 6, 10, and 20 of the application. Even though the Gorlich, et al. '149 patent discloses a temperature that falls within the preferred ranges recited in these dependent claims, it does not necessarily follow that the Gorlich, et al. '149 patent teaches or suggests melting *but not burning* a thermoplastic film, as each of the independent claims recites. As noted in the specification at pages 7-8, the temperature of the cutting edge implement is just one factor in whether or not the film will be burned. Other factors include the type of film, the thickness of the film, the dwell time during which the cutting edge implement contacts the film, and the pressure exerted on the film by the cutting edge implement.

Because the Gorlich, et al. '149 patent teaches heating the cutting edge to “extremely high temperatures” — indeed, high enough to “vaporize” the film — Applicants submit that the patent actually *teaches away* from the claimed invention, in which the

cutting edge implement is heated only to a temperature sufficient to melt *but not to burn* the thermoplastic material.

The Dworak, et al. patent relates to a method and apparatus for continuously forming and sealing low density polyethylene bags at a high speed. More specifically, a continuous length of open-edged, unfilled polyethylene pouches is formed by transversely sealing the film at longitudinally spaced intervals and creating perforations longitudinally in the sealed portion of the film. As best illustrated by Figure 9, a heating element [108] is applied to a film shield [148] which contacts a film [22]. (Col. 9, lines 23-26.) The film [22] is advanced, and at distinct intervals thereof, heat is applied by the heating element [108] to form a seal on the film [22]. After the seal is formed, a blade [156] advances from a knife block assembly to create serrations in the seal. (Col. 9, lines 56-62.) The Dworak, et al. patent is silent with respect to temperature of the heating element [108] and/or the blade [156], and, therefore, whether the film [22] is being burned.

The Gorlich, et al. '937 patent issued based on a parent application of the continuation-in-part application that issued as the Gorlich, et al. '149 patent, discussed above. As such, Applicants submit that the Gorlich, et al. '937 patent adds nothing further that would anticipate or render obvious the present invention.

IV. Discussion Of References Cited, But Not Relied Upon, In The Office Action

Similarly, Applicants submit that none of the references cited by, but not discussed in, the Office Action teaches or suggests, *inter alia*, a cutting edge implement that is heated to a temperature sufficient to melt *but not to burn* a thermoplastic material.

U.S. Patent No. 6,260,336 to Motomura merely discloses a sealing and cutting device, wherein the cutting device is unheated and is separate from the sealing device.

U.S. Patent No. 5,179,819 to Sukeyasu, et al. merely discloses a method and apparatus in which “a heat sealing blade of arch shape and a cutting blade of straight shape work in a synchronized action” to apply a film over a bottle and remove the excess film therefrom. (Col. 7, lines 32-49.)

U.S. Patent No. 4,115,182 to Wildmoser is directed to sealing means. More specifically, the Wildmoser patent discloses that a sealing apparatus cuts and heat seals thermoplastic sheets drawn under tension through relatively movable, deformable sealing jaws. As the jaws move relative to each other, they create tension in a thermoplastic sheet, which is characterized by: “the material [the sheet is made of] dissipates or vaporizes and does not appear to leave any residue which may be employed to fuse sheets together.” Col. 3, ll. 58-60. Applicants note that the Wildmoser patent does disclose that an “impulse heater wire [40] [is] heated to a temperature in the range of 350° to 550° F. to melt the polypropylene material.” (Col. 5, lines 19-21.) Applicants submit, however, that even though the Wildmoser patent discloses a preferred temperature range that falls within a preferred temperature range of the present invention, as claimed in various dependent claims, it does not necessarily follow that the Wildmoser patent teaches or suggests a temperature that melts *but does not burn* a thermoplastic film, as each independent claim recites. As discussed in more detail above, the temperature of the cutting edge implement is just one factor in whether the film will be burned.

U.S. Patent No. 5,839,572 to Yeager is directed to a storage bag with soaker pad. More specifically, the Yeager patent discloses a bag having a front and rear panel of a plastic film, the front and rear panels being closed at one end to form a bottom of the bag, the bag being open at the opposite end for receipt of goods to be stored in the bag, a fluid absorbing pad located inside the bag, and an enclosure connected to the inside. Although the disclosure relates generally to methods for making the bags, Applicants submit that the Yeager patent neither anticipates Applicants' invention nor adds anything to the disclosures of the other patents that would render obvious Applicants' invention.

V. Conclusion

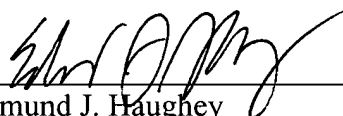
For the foregoing reasons, Applicants submit that the art of record neither teaches nor suggests important features of the claimed invention, such as recited in independent claims 1, 8, 15, 23, and 27. Applicants, therefore, request reconsideration and withdrawal of the rejections of claims 1, 8, 15, and 23, and favorable consideration of claim 27.

The remaining dependent claims depend from the independent claims, and should be deemed allowable for at least the same reasons as those claims. The dependent claims also recite additional features that further distinguish the claimed invention from the cited art, such as those noted above with respect to claims 3, 17, and 24, for example. Further individual consideration and allowance of the dependent claims is requested.

Applicants submit that the subject application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action, and an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to the address given below for S.C. Johnson & Son, Inc.

Respectfully submitted,



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**VERSION WITH MARKINGS SHOWING CHANGES MADE TO
SPECIFICATION**

The paragraph starting at page 2, line 5 through page 2, line 12, has been amended as follows:

As shown in FIG. 3, a typical hot wire 24 consists of a relatively thin, elongated piece of electrically-conductive material stretched between supports 28 disposed on opposite sides of the effective cutting lengths 30 of the hot wire 24. To date, hot wires of various sizes and shapes have been used. For instance, some processes have employed hot wires having circular cross sections with diameters up to about 0.050 inches. Other processes have employed rectangular or wedge-shaped hot wires. Such conventional hot wires generally are heated to temperatures between 1000-1400°F [100-1400°F].



Application No.: 09/614,898
Attorney Docket No.: J-2850 (00050.79900.)

VERSION WITH MARKINGS SHOWING CHANGES MADE TO CLAIMS

12. (Amended) A method according to claim 8, wherein the moving [passing] step comprises pinching the film between the cutting edge implement and the other surface for approximately one second.

13. (Amended) A method according to claim 8, wherein the moving [passing] step comprises advancing the cutting edge implement through an opening in the one opposing surface.

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